
MICHAEL F. LEPAGE

EDUCATION

Master of Science, Atmospheric Science, Texas Tech University, 1981
Bachelor of Science, Mathematics, McGill University, Montreal, 1979

PROFESSIONAL QUALIFICATIONS

Accredited Consulting Meteorologist (Canadian Meteorological and Oceanographic Society)
Certified Consulting Meteorologist (American Meteorological Society)

PROFESSIONAL AFFILIATIONS

American Meteorological Society
Canadian Meteorological and Oceanographic Society
Air & Waste Management Association

WORK EXPERIENCE

1981 to 1990	Technical Coordinator, Rowan Williams Davies & Irwin Inc.
1990 to 1998	Project Manager, Rowan Williams Davies & Irwin Inc.
1998 to 2001	Senior Specialist, Rowan Williams Davies & Irwin Inc.
2001 to Present	Project Director, Rowan Williams Davies & Irwin Inc.

Mr. Lepage joined RWDI in 1981 and became an Associate of the firm in 1988. As a Project Director, he provides overall direction on air quality and meteorological projects, ensuring that a high level of service is provided and, at the same time, RWDI's interests are preserved on all projects. Mr. Lepage also oversees RWDI regional atmospheric modelling group, which is involved in high-end numerical modelling of regional air pollutants such as ground-level ozone and fine particulate matter.

Since joining RWDI, Mr. Lepage has been involved in a wide variety of projects related to air quality, wind engineering, and meteorology, and frequently provides expert testimony and review. Major research projects in Air Quality include: simulating the dispersion of nerve agents at a military air base; simulations of turbulence and dispersion around buildings; fugitive dust emissions in the wood products industry; dispersion of emissions at the portals of roadway tunnels; dust control at mine tailings ponds; and simulation of peak concentrations in fluctuating plumes. In recent years he has been extensively involved in regional modelling of meteorology and atmospheric chemistry to investigate large scale smog events, using models such MM5, Models-3/CMAQ, SAQM, CALGRID and CALPUFF.

Mr. Lepage has frequently provided expert testimony in court cases and hearings.

The following is a partial list of projects completed by Mr. Lepage:

RWDI

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Regional Meteorology / Air Quality / Atmospheric Chemistry Modelling Projects

- Emission reductions within Lower Fraser Valley, British Columbia
- Meteorological modelling of the Lower Fraser Valley, British Columbia
- Regional modelling of Southern Ontario
- Regional modelling of Pearl River Delta, Southern China
- Urban modelling for the City of Toronto, Ontario
- Emission Inventory processing for Alberta, Canada
- Sthe Energies, Mississauga, Ontario
- Alcan, Jonquiere, Quebec

International Industrial Projects

- Kohinoor Power Project, Lahore, Pakistan
- Gul Ahmed Power Project, Karachi, Pakistan
- Tapal Power Project, Karachi, Pakistan
- Baria Vung Tau Power Project, Vung Tau, Vietnam
- Kipevu II Power Project, Mombassa, Kenya
- Termoriente Power Project, Shushufundi, Ecuador
- Doctor Bird Power Plant Monitoring Project, Kingston, Jamaica
- Centromin Smelter, La Oroya, Peru
- Janssen Pharmaceuticals, Amtwerp, Belgium
- Shell Petroleum, Warri, Nigeria
- Khulna Power Project, Khulna, Pakistan
- Megnaghat Power Project, Pakistan
- Barrick Gold Mine, Chile, S.A.

North American Industrial Projects

- Motorola, Phoenix, Arizona
- Safety Kleen Canada Re-refinery, Breslau, Ontario
- Chrysler Technology Center, Auburn Hills, Michigan
- Pratt & Whitney, Mississauga, Ontario
- Steelcase Canada, Toronto, Ontario
- CIBC Data Centre, Mississauga, Ontario
- F&P Mfg., Tottenham, Ontario
- Union Carbide, Welland, Ontario
- Universal Terminals, Cornwall, Ontario
- Durr Industries, Detroit, Michigan
- Canadian General Tower Ltd., Etobicoke, Ontario

Pharmaceutical Facilities

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- Glaxo R&D Facility, Mississauga, Ontario
- Merck West Point Campus, West Point, Pennsylvania
- Whitehall-Robins, Richmond, Virginia
- Wyeth Ayerst, Pearl River, New York
- Janssen Pharmaceuticals, Antwerp, Belgium

University and Other Laboratories

- University of Rochester, New York
- University of Pittsburgh, Pennsylvania
- University of British Columbia, Vancouver, British Columbia
- Case Western University, Cleveland, Ohio
- OMAF Headquarters, Guelph, Ontario
- University of Michigan, Ann Arbor, Michigan
- MTO Laboratories, Toronto, Ontario
- Rice University, Houston, Texas
- UC Davis, Davis, California
- UC Irvine, Irvine, California
- State University of New York, Albany, New York
- Tufts University Medical School, Boston, Massachusetts
- Washington University Medical School, St. Louis, Missouri
- Northwestern University Medical School, Chicago, Illinois

Hospitals

- Fairview Hospital, Cleveland, Ohio
- Cape Breton Regional Hospital, Sydney, Nova Scotia
- Grace Maternity Hospital, Halifax, Nova Scotia
- Grace General Hospital, Scarborough, Ontario
- Cambridge Hospital, Cambridge, Massachusetts
- Lethbridge Hospital, Lethbridge, Alberta
- Holy Cross Hospital, Calgary, Alberta
- Cleveland Health Sciences Center, Cleveland, Ohio
- LAC + USC Hospital, Los Angeles, California
- Hermann Hospital, Houston, Texas
- Fort Bragg Hospital, Fort Bragg, North Carolina
- St. Joseph's Hospital, London, Ontario

Landfill/Composting Facilities

- Essex-Windsor Landfill, Ontario
- Eastview Landfill, Guelph, Ontario

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- Brockville Landfill, Toronto, Ontario
- Keele Valley Landfill, Toronto, Ontario
- Niagara Road 12 Landfill, Grimsby, Ontario
- Cobourg Landfill, Cobourg, Ontario
- Huron County Landfill, Lucknow, Ontario
- Wet/Dry Facility, Guelph, Ontario
- Canada Composting, Markham, Ontario
- Toronto Area Landfill Site Search, Toronto, Ontario
- Mushroom Cooperative, Burford, Ontario

Aggregate Industry

- TCG Materials, Brantford, Ontario
- LaFarge Canada, Uxbridge, Ontario
- Dufferin Aggregates, Ramara Township, Ontario
- Seely and Arnill Aggregates, Wasaga Beach, Ontario
- Milton Limestone Quarry, Milton, Ontario
- Standard Aggregates, Hagersville, Ontario
- Greenwood Construction, Orangeville, Ontario
- Lockyer Brothers Ltd., Orangeville, Ontario
- Searjent Construction, Oro, Ontario
- Cook Construction, Oro, Ontario
- Alfa Aggregates, Oro, Ontario
- Gormley Aggregates, Erin, Ontario
- James Dick Construction, Ramara Township, Ontario
- Caledon Sand and Gravel, Caledon, Ontario
- Armbro Ltd., Caledon, Ontario
- Dufferin Aggregates, Milton, Ontario
- St. Lawrence Cement, Mississauga, Ontario
- St. Marys Cement, Bowmanville, Ontario
- Tomlinson Quarry, Ottawa, Ontario

Coal, Wood Products, and Metal Industries

- Ontario Hydro, Atikokan, Ontario
- Cape Breton Development Corporation, Sydney, Nova Scotia
- Pennsylvania Gas and Electric, Homer City, Pennsylvania
- Kerr McGree Inc., Trona, California
- Ontario Hydro, Nanticoke, Ontario
- Stelco, Nanticoke, Ontario
- Dofasco Ltd., Hamilton, Ontario
- Domtar Fine Papers, Espanola, Ontario
- Roseburg Forest Products, Roseburg, Oregon
- CP Rail, Schreiber, Ontario

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- Brunswick Mining and Smelting, Bathurst, New Brunswick
- F.F Soucy, Riviere-du-Loup, Quebec
- Donohue Matane, Matane, Quebec
- Northwood Pulp Mill, Prince George, British Columbia
- Kimberly Clark, Marathon, Ontario
- Domtar Fine Papers, Windsor, Quebec.

Ventilation Projects

- Pearson International Airport, Terminal Redevelopment, Toronto, Ontario
- E & E Building, Buffalo, New York
- Ford Motor Company, Sarnia, Ontario
- Cassiar Connector Tunnel, Vancouver, British Columbia
- UCAR Carbon Canada, Welland, Ontario
- Ontario Hydro, Bruce Nuclear Generating Station, Port Elgin, Ontario
- Abitibi Price, Iroquois Falls, Ontario
- Keene Widelite, Cambridge, Ontario

Heat and Mass Transfer Problems

- Snow Slide-off, Liberty Place, Philadelphia
- Snow Slide-off, Javitz Convention Center, New York
- Snow Slide-off, Columbus Centre, New York
- Cooling around a Snow Disposal Facility, Ottawa, Ontario
- Icing of a Highway Overpass, Woodstock, Ontario
- Icing of a Roadway Bridge, Downsview, Ontario

Dispersion of Roadway Emissions

- Hunt Club Road Expansion, Ottawa, Ontario
- Coventry Road Expansion, Ottawa, Ontario
- Lewis Wharf, Boston, Massachusetts
- Central Artery/Tunnel, Boston, Massachusetts
- CN Railway Lands, Toronto, Ontario
- Cassiar Connector Tunnel, Vancouver, British Columbia
- High Speed Rail Study, Windsor to Quebec, Canada
- Dufferin Aggregates, Brechin, Ontario
- King Edward Avenue, Ottawa, Ontario
- N-S Arterial Road, Mississauga, Ontario
- TCCA Fixed Link, Toronto, Ontario
- Port Centre Development, Toronto, Ontario
- TTC Alternative Fuels Study, Toronto, Ontario

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Research and Development

- Anchorage area-wide wind speed study, a statistical analysis of historical wind speed data, sponsored by the City of Anchorage, Alaska
- Source apportionment study for airborne particulate matter sponsored by Environment Canada.
- Laser Doppler techniques to measure turbulence in the wake of a model building in a wind tunnel, sponsored by Ontario Hydro.
- Physical model simulation of fluctuating chlorine concentrations near a pulp and paper mill, sponsored by the Ontario Ministry of the Environment.
- Dispersion of nerve agents at a Canadian Forces Base, sponsored by the Department of National Defence.
- Control of mine tailings dust, sponsored by Noranda Inc.
- Development of in-house statistical analysis methods for long-term wind data.
- Problems with particulate emissions in the wood products industry, sponsored by the Ontario Ministry of the Environment.
- Dispersion of pollutants at the exit of a vehicle tunnel, sponsored by Central Artery/Tunnel, Boston, Massachusetts.
- Snow accumulation around roof-mounted solar collectors, sponsored by the National Research Council.

PUBLICATIONS / CONFERENCE PROCEEDINGS

Lepage, M. F., and M. Van Altena (2001), *The Effect of Electric Vehicles on Air Quality in Canada: A Regional Air Quality Study*, A&WMA 94th Annual Conference and Exhibition, Orlando, Florida (in print).

Qiu, X. and M. F. Lepage (2001), *The SMOKE Emission Processor and Community Multi-Scale Air Quality Model (CMAQ) Applied to Southern Ontario*, US EPA 10th Annual Emission Inventory Conference: One Atmosphere, One Inventory, Many Challenges, Denver, Colorado (in print).

Lepage, M.F.(2000), *Ventilation Guide for the Automotive Industry, Chapter 14, Outdoor Air Pollution Prevention*, HPAC Engineering, Cleveland, OH.

Boulton, J. W. and M. F. Lepage (2000), *Application of the Models-3 Framework to a Canadian Urban Airshed*, A&WMA 93rd Annual Conference and Exhibition, Salt Lake City Utah.

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M. F. Lepage and J. W. Boulton (2000), *Source Apportionment of Particulate Matter in Canada*, CPANS/PNWIS/2000 Air Toxics Conference/Workshop, Banff, Alberta (in print).

Pagowski, M., M. F. Lepage and W. Jiang (2000), *Meteorological Processing for a Models-3 Application in the Lower Fraser Valley, British Columbia, Canada*, 11th Joint Conference on the Applications of Air Pollution Meteorology with the A&WMA.

Nadel, C.B., W. Connell, M.F. Lepage and A.E. Davies (1997), *Jet Fan Based Ventilation Systems for the Central Artery/Tunnel Project*, 9th International Symposium on Aerodynamics and Ventilation of Vehicle Tunnels, Aosta Valley, Italy (in print).

Lepage, M.F., M.D. Vanderheyden and A.E. Davies (1997), *Evaluating Air Quality at Exit Portals of the Central Artery/Tunnel*, AWMA 90th Annual Meeting and Exhibition, Toronto, Ontario.

Lepage, M.F., M.D. Vanderheyden, A.E. Davies and C. Nadel (1997), *Longitudinal Ventilation of Vehicle Tunnels and the Effect on Ambient Air Quality*, XIIIth IRF World Meeting, Toronto, Ontario.

Lepage, M.F., M.D. Vanderheyden, A.E. Davies and G. DeBrou (1997), *Fluctuating Concentrations: Wind Tunnel Replication of a Field Experiment*, AWMA 90th Annual Meeting and Exhibition, Toronto, Ontario.

Lepage, M.F., M.D. Vanderheyden, A.E. Davies and C. Nadel (1996), *Simulating Vehicle Emissions at the Exit of a Vehicle Tunnel*, AWMA 89th Annual Meeting and Exhibition, Nashville, Tennessee.

Chadder, D.S., M.F. Lepage and A.E. Davies (1994), *Ambient Monitoring for Vinyl Chloride at Municipal Landfill*, AWMA 87th Annual Meeting and Exhibition, Cincinnati, Ohio.

Nadel, C., M.D. Vanderheyden, M. Lepage, A.E. Davies, P. Wan, H. Ginzburg and G. Schattaneck (1994), *Physical Modelling of Dispersion of a Tunnel Portal Exhaust Plume*, 8th International Symposium on Aerodynamics & Ventilation of Vehicle Tunnels, Liverpool, UK.

Lepage, M.F. and G.D. Schuyler (1991), *Re-entrainment of Exhaust Gases in a Longitudinally Ventilated Tunnel*, 7th International Symposium on Aerodynamics and Ventilation of Vehicle Tunnels, Brighton, England.

Smeaton, W.H., M.F. Lepage and G.D. Schuyler (1991), *Using Wind Tunnel Data and Other Criteria to Judge the Acceptability of Exhaust Stacks*, ASHRAE Summer Meeting, Indianapolis.

Lepage, M.F. and G.D. Schuyler (1990), *How Fresh is Fresh Air?*, Proceedings of the Fifth International Conference on Indoor Air and Climate, Toronto, Ontario.

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Lepage, M.F. and P.A. Irwin (1989), *Scale Model and Analytical Methods to Improve Natural Ventilation of an Office*, Journal of Wind Engineering and Industrial Aerodynamics, Vol. 36, pp. 469 - 479.

Lepage, M.F. and G.D. Schuyler (1988), *A Simulation to Predict Snow Sliding and Lift-off on Buildings*, Proceedings of the Engineering Foundation Conference on a Multidisciplinary Approach to Snow Engineering, Santa Barbara, California.

Lepage, M.F. and C.J. Williams (1988), *Cold Room Studies for Snow and Ice Control on Buildings*, Proceedings of the Engineering Foundation Conference on a Multidisciplinary Approach to Snow Engineering, Santa Barbara, California.

Lepage, M.F. and A.E. Davies (1988), *An Evaluation of Problems of Particulate Emission in the Wood Products Industry*, MOE Technology Transfer Conference, Toronto, Ontario.

Davies, A.E. and M.F. Lepage (1988), *Identifying and Solving Exhaust Gas Reingestion Problems Using Wind Tunnel Tests*, 81st Annual APCA Meeting and Exhibition, Dallas, Texas.

Lepage, M.F., A.E. Davies and C.J. Williams (1986), *Fugitive Dust Control Studies Using Scale Models and Mass Loss Estimates*, 79th Annual APCA Meeting and Exhibition, Minneapolis, Minnesota.

Lepage, M.F. and P.A. Irwin (1985), *A Technique for Combining Historical Wind Data with Wind Tunnel Tests to Predict Extreme Wind Loads*, Fifth U.S. National Conference on Wind Engineering, Lubbock, Texas.

Irwin, P.A., S.L. Gamble and M.F. Lepage (1984), *Snow and Wind Loads Resulting from Roof Mounting of Solar Collectors*, D.S.S. No. 04SX.31125-2-2701, Ottawa, Ontario.